1. A method of determining a path from a source node to a destination node through a network, comprising:

      grouping structures in a network into structure groups, wherein each structure group comprises at least two nodes;

      determining virtual circuit information for every pair of nodes in said structure groups;

      determining connections between said structure groups; and

      determining a least cost path from said source node to said destination node using at least said virtual circuit information and connection information.

2. The method of claim 1, wherein the structures in said structure groups have the same set of office locations.

3. The method of claim 1, wherein said virtual circuit information includes information regarding whether a path using a common channel is available through said structure.

4. The method of claim 3, wherein a path using a common channel between a pair of nodes having time division multiplexing capability is available when the same time slot is available throughout a path between said nodes.

5. The method of claim 3, wherein a path using a common channel between a pair of nodes having wavelength division multiplexing capability is available when the same frequency is available throughout a path between said nodes.

6. The method of claim 1, wherein a cost is associated with each node in the network and with each link that connects a pair of nodes in the network, and wherein said least cost path determination considers the cost of the nodes and links visited on a path.

7. The method of claim 6, wherein the cost of a node is increased when a signal changes channels at said node.

8. The method of claim 7, wherein a link may be an express link or a local link, and the cost of an express link is less than the cost of a local link.

9. The method of claim 1, wherein said least cost path determination uses a Dijkstra algorithm.

10. The method of claim 1, wherein said least cost path may use SONET/SDH equipment, PDH equipment, and dense wavelength division multiplexing equipment.

11. A method of planning a path through a network, comprising:

receiving a request for a path through a network of structure groups between a source node and a sink node;

determining virtual circuit information for each structure group in said network; and

determining a path though said network using said virtual circuit information.

12. The method of claim 11, wherein nodes in said network may be connected by links, and wherein said virtual circuit information is determined using a data set containing information on the availability of channels in said links.

13. The method of claim 12, further comprising the step of updating said data set to reflect that said path in no longer available.

14. The method of claim 11, wherein the virtual circuit information includes the number of paths using a common channel through said structure group between any pair of nodes.

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15. The method of claim 14, wherein said request includes the bandwidth desired, and wherein a path through a structure group is available only if a path having the desired bandwidth is available.

16. The method of claim 14, wherein a slot-edge matrix is maintained for each data structure, and wherein the availability of a channel is determined based on said slot-edge matrix.

17. The method of claim 16, wherein said request also includes a time period requested, wherein a slot-edge matrix is maintained for various requestable time periods, and wherein the availability of a channel is determined based on the slot-edge matrix for the time frame requested.

18. The method of claim 11, wherein said virtual circuit information for each path through a structure group includes the number of nodes visited on said path.

19. The method of claim 11, wherein said request includes the type of service desired, and wherein said step of determining a path through said network selects a path using the desired service type.

20. The method of claim 19, wherein said type of service may be SONET service.

1   21.   The method of claim 11, wherein said network is a fiber-optic network.

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4   22.   The method of claim 11, wherein said virtual circuit information includes two pseudo

5   nodes for each group node.

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